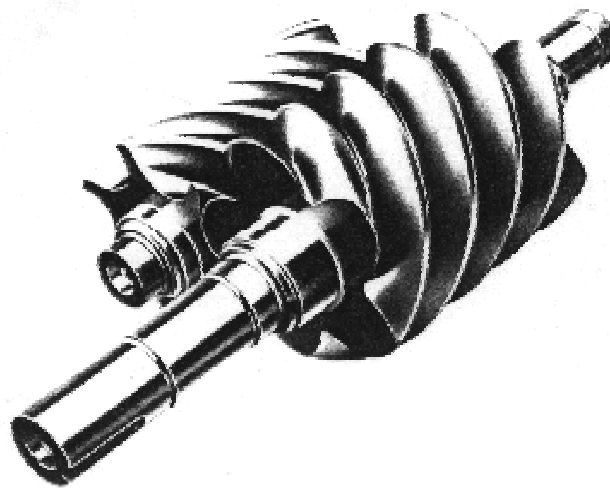




Authorized Distributor Only

ROTARY SCREW AIR-END

MAINTENANCE MANUAL AND PARTS LIST



MODEL
BCS-130 FOR CHSA-20/25/30
BCS-168 FOR CHSA-50/75/100

COAIRE TECHNOLOGIES, CORPORATION

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Printed in U.S.A.

For proper and safe use of the compressor, please follow all instructions and safety precautions as identified in this manual, along with general safety regulations and practices.

SAFETY AND PRECAUTIONS

Before you install the air compressor you should take the time to carefully read all the instructions contained in this manual. Electricity and compressed air have the potential to cause severe personal injury or property damage. Before installing, wiring, starting, operating or making any adjustments, identify the components of the air compressor using this manual as a guide. The operator should use common sense and good working practices while operating and maintaining this unit. Follow all procedures and piping accurately. Understand the starting and stopping sequences. Check the safety devices in accordance with the following procedures contained in this manual. Maintenance should be done by qualified personnel, accurately with proper tools. Follow the maintenance schedule as outlined in the manual to ensure problem free operation after start up.

SAFETY PRECAUTIONS

BEFORE INSTALLING THE COMPRESSOR OR PERFORMING ANY MAINTENANCE READ THIS MANUAL CAREFULLY.

WARNINGS

COMPRESSED AIR AND ELECTRICITY ARE DANGEROUS. BEFORE DOING ANY WORK ON THIS UNIT, BE SURE THE ELECTRICAL SUPPLY HAS BEEN SHUT OFF (LOCKED AND TAGGED) AND THE ENTIRE COMPRESSOR SYSTEM HAS BEEN VENTED OF ALL PRESSURE.

1. Do not remove the cover, loosen or remove any fittings, connections or devices when this unit is operating or in operation. Hot liquid and air that are contained within this unit under pressure can cause severe injury or death.
2. The compressor has high and dangerous voltage in the motor, the starter and control box. All installations must be in accordance with recognized electrical procedure. Before working on the electrical system, ensure that the system's power has been shut off by use of a manual disconnect switch. A circuit breaker or fuse switch must be provided in the electrical supply line to be connected to the compressor. The preparation work for installation of this unit must be done in suitable grounds, maintenance clearance and lighting arrestors for all electrical components.
3. Do not operate the compressor at a higher discharge pressure than those specified on the compressor nameplate. If so an overload will occur. This condition will result in electric motor compressor shutdown.
4. Use only safety solvent for cleaning the compressor and auxiliary equipment.
5. Install a manual shut off valve (isolation type) in the discharge line for service work.
6. Whenever pressure is released through the safety valve during operation, it is due to excessive pressure in the system. The cause of excessive pressure should be checked and immediately corrected.
7. Before doing any mechanical work on the compressor,
 - a) Shut down the unit.
 - b) Electrically isolate the compressor by use of the manual disconnect switch in the power line to the unit. Lock and tag the switch so that it cannot be operated.
 - c) Release all compressed air within the system and isolate the unit from any other sources of air.
8. Allowing the unit lubricants to enter into the plant air system must be avoided at all times. Air line separators, which are properly selected and installed, can reduce any liquid carry-over close to zero.
9. Before starting the compressor, the maintenance instructions should be thoroughly read and understood.
10. After maintenance work is completed, covers must be securely closed.
11. For questions contact your distributor before proceeding.

STATEMENT OF WARRANTY TERMS & CONDITIONS

COAIRE's screw air compressors are warranted to be free of defects in materials and workmanship under proper use, installation, and application. This warranty shall be for a period of 15 months from date of shipment from our factory or other stocking facilities or 12 months from date of installation. Proof of installation date will be required. All air compressors outside the U.S. and Canada carry a parts only warranty.

ALL FREIGHT DAMAGE CLAIMS ARE NOT THE RESPONSIBILITY OF THE MANUFACTURER AND ARE NOT COVERED UNDER WARRANTY AS ALL PRODUCTS ARE SHIPPED F.O.B. SHIPPER.

PLEASE DIRECT ALL FREIGHT CLAIMS TO THE SHIPPER IN QUESTION.

MAINTENANCE AND ADJUSTMENTS

ADJUSTMENTS TO THE HOT GAS AND MAINTENANCE OF FLOAT AND AUTOMATIC DRAINS AND CONDENSER COILS ARE CONSIDERED TO BE ROUTINE MAINTENANCE AND THEREFORE NON-WARRANTABLE ITEMS AND ARE THE SOLE RESPONSIBILITY OF THE END USER. CONSULT THE INSTALLATION, OPERATION AND MAINTENANCE MANUAL FOR THE ADJUSTMENT AND MAINTENANCE PROCEDURES.

This warranty does not apply to any unit damaged by accident, modification, misuse, negligence, or misapplication. Damage to heat exchangers by exposure to ammonia, any other corrosive substance or sub-freezing environment will be considered misuse.

Any air compressors part or material found defective will be repaired, replaced or refunded, at the sellers option free of charge, provided that COAIRE is notified within the above stated warranty period. **All returns of allegedly defective equipment must have prior written authorization.** Said authorization may be obtained through our air compressor service department. All air compressors, parts, materials must be returned **freight prepaid** to the Manufacturer's factory within 30 days of return authorization date. Any shipment returned to the factory collect will be refused.

If an item is found to be warrantable, the repaired item or replacement will be returned normal ground freight prepaid within the continental United States and Canada. Expedited shipment costs are the responsibility of the requestor.

Any replacement part or material is warranted only to the extent of the remaining warranty period of the dryer or to the extent as provided by the supplier, whichever is longer.

Identification Plate

The identification plate is located on the side of the air compressor and shows all the primary data of the machine. Upon installation, fill in the table on the previous page with all the data shown on the identification plate. This data should always be referred to when calling the manufacturer or distributor.

The removal or alteration of the identification plate will void the warranty rights.

DISCLAIMER

The warranty does not cover any responsibility or liability for direct or indirect damages to persons, or equipment caused by improper usage or maintenance, and is limited to manufacturing defects only. Refer to COAIRE Warranty policy manual for travel, mileage and special charge considerations. The warranty will be immediately voided if there are changes or alterations to the dryer.

WHO TO CONTACT IF YOU HAVE A WARRANTY CLAIM:

COAIRE Technologies, Corporation

Phone (562) 463-3935

Fax (562) 463-4928

All freight damage claims should be filed within 15 working days and should be directed to the carrier.

SAFETY AND PRECAUTIONS
STATEMENT OF WARRANTY TERMS AND CONDITIONS

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CHAPTER 1 . GENERAL INFORMATION

1-1. SCOPE

This manual shall be applied to air end models for COAIRE screw Air End as follows. ; BCS-130, BCS-168. Screw Air End driven by an electric motor is the important part of screw air compressor unit. It is single stage, oil injected, rotary screw type. Screw Air End have been developed to meet higher performance including high efficiency, high reliability, low noise and low vibration, and have been introduced to the market since 1988 with our long manufacturing experiences.

1-2. COMPRESSION PROCESS

Air flows through an air intake filter, intake silencer and suction control valve to the air end suction port. Air then is compressed by the rotation of the male rotor, and oil is injected into the Air End during compression process. The injected oil performs various functions, such as, sealing, cooling as well as lubricating. The air/oil mixture leaves the air end through the discharge port.

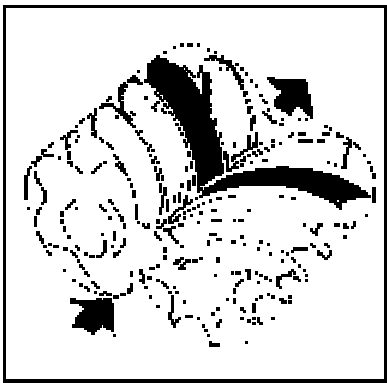


Fig 1-1. Suction Process

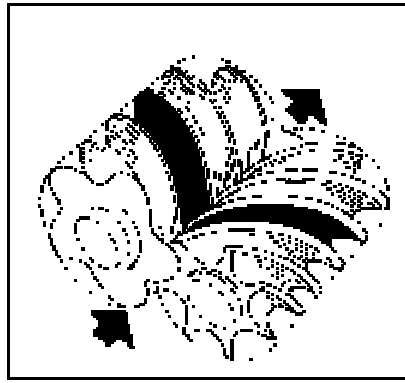


Fig 1-2. Compression Process



Fig 1-3. Oil Injection Process

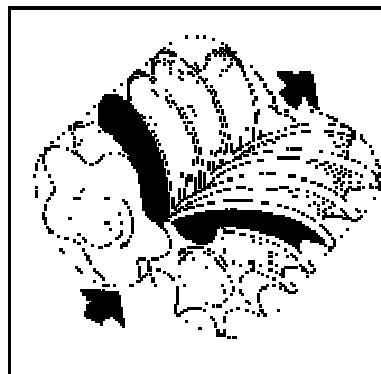


Fig 1-4. Discharge Process

1-2-1. SUCTION PROCESS.

Along with the rotation of the rotor, air is admitted fully into the void of two rotors through the suction port. The void is then isolated from the suction port with the casing wall, thereby completing the suction process.

1-2-2. COMPRESSION PROCESS.

The air in the void is compressed by meshes between the male rotor and the female rotor lobes and squeezes the air against discharge cover.

1-2-3. OIL INJECTION PROCESS.

As pressure builds, oil is injected into the compression area and onto the bearings and shaft seal, serving to lubricate, absorb compression heat and seal the rotors.

1-2-4. DISCHARGE PROCESS.

Compression continues as the rotor rotates. When the void comes to the discharge port provided in the discharge chamber, the compressed air is discharged through the port. While this process is occurring with one inter-lobe space, the other spaces are following the same cycle. Therefore air is continuously compressed.

1-3. OIL FLOW

The oil which is collected in the oil sump at the bottom of the oil separator is circulated through the lubrication system by the pressure differential existing between the oil separator and the air end. Oil injected via the internal oil hole is provided into the intermesh among male rotor, female rotor and the rotor casing, the shaft seal, suction side and discharge side bearings.

1-4. FEATURES

1-4-1. Precision grind rotors provide close inter-lobe clearance. This minimizes leakage and increases efficiency.

1-4-2. Long service life and high reliability of bearings achieved by application of 5+7 and 4+6 profile rotors. At the discharge end of the Air End, double angular contact ball bearings for the male and female rotors are located to support axial thrust loads and to position the rotor. Cylindrical roller bearings are also located to support radial loads.

1-4-3. With a differential pressure lubrication system, the Air End can dispense with an oil pump, thus dramatically simplifying the oil supply system.

1-4-4. The wedge construction of the secondary sealing element of the mechanical seal naturally eliminates leakage. This seal is highly reliable and excellent performance.

CHAPTER II . FUNCTIONAL DESCRIPTIONS

2-1. CONSTRUCTIONS

Oil injected, single stage, rotary screw Air End primarily consists of rotors, housing, shaft seal along with other component parts.

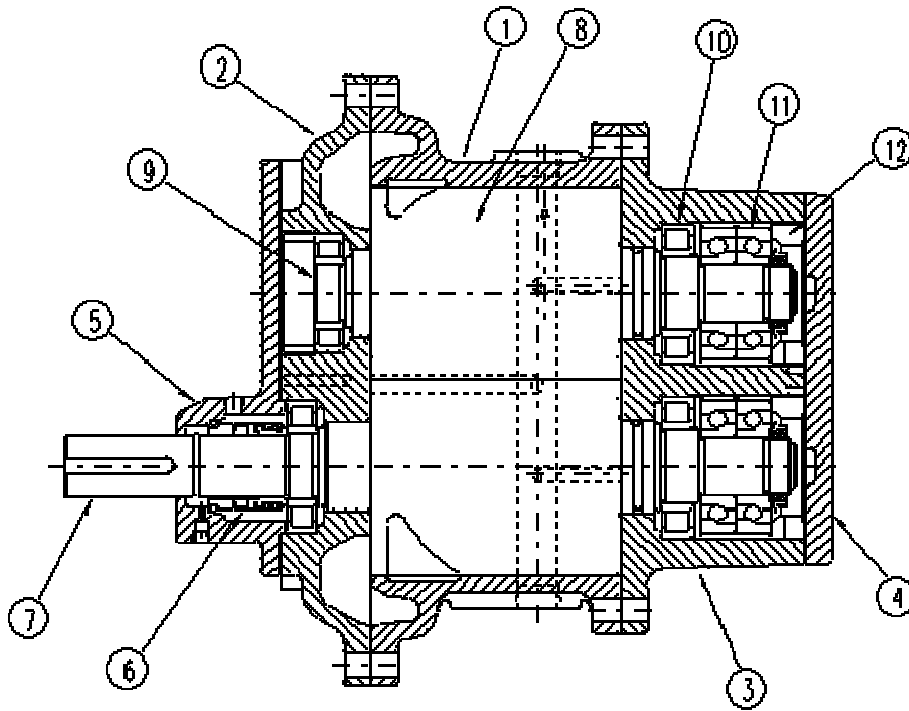


Fig 2-1. Cross Section of Air end(Model : BCS-130)

NO.	NAME	NO.	NAME
1	ROTOR HOUSING	7	MALE ROTOR
2	INLET CASING	8	FEMALE ROTOR
3	OUTLET CASING	9	CYLINDRICAL ROLLER BEARING (INLET SIDE)
4	BEARING COVER	10	CYLINDRICAL ROLLER BEARING (OUTLET SIDE)
5	SEAL COVER	11	ANGULAR CONTACT BALL BEARING
6	MECHANICAL SEAL	12	DISTANCE RING

2-1-1. ROTORS

With high-precision and high-grade finishing rotors, mechanical vibration sources have been eliminated, thus ensuring smooth and quiet operation. The lobe combinations are two types. In case of model BCS-130, the lobe combinations of male and female rotors have 5+7 rotor profile. In case of model BCS-168, the lobe combinations of male and female rotors have 5+7 profile.

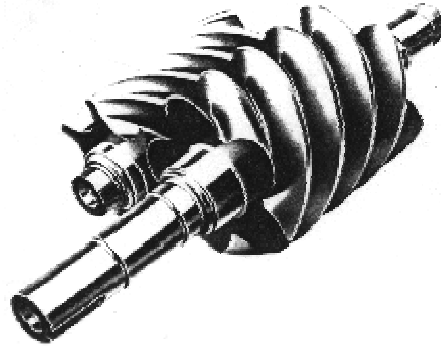


Fig 2-2. Newly-Developed 5+7 Profile Screw Rotors

2-1-2. HOUSING

Screw air end incorporates the low noise design with double housing construction. With this design, the noisy male rotor is located at the center of double housing minimizing the noise liable to occur during low temperature operation. The cylindrical roller bearings support the radial loads, whereas the angular ball bearings support the axial loads.

2-1-3. SHAFT SEAL

Mechanical seal is fitted on the male rotor shaft to prevent oil and air leakage.

2-1-4. BEARINGS

At the discharge end(the outlet casing) of the Air End, double angular contact ball bearings and a cylindrical roller bearing for the male rotor and the female rotor are located to support axial thrust loads and radial loads. Moreover, the springs for reducing the axial loads is located, assuring long life and high reliability. Oil for lubrication is supplied to each bearing by the pressure difference without oil pump.

2-2. DRIVE

2-2-1. V-BELT DRIVE(Fig. 2-3)

Motor speed is increased by V-belt drive to the male rotor's driving speed.

2-2-2. COUPLING DRIVE(Fig. 2-4)

Motor speed is transferred by coupling drive to the male rotor's driving speed.

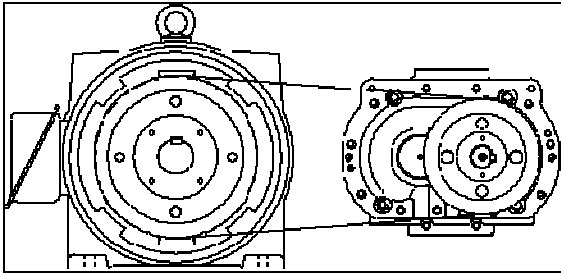


Fig 2-3. V-Belt drive

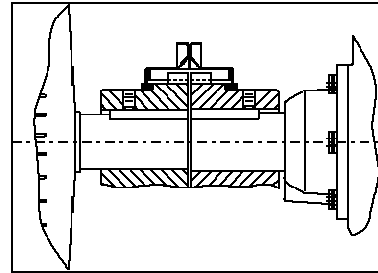


Fig 2-4. Coupling drive

2-3. CAPACITY CONTROL.

All models provide capacity control, on-line/off-line control with upper range modulation. Internal pressure is vented to atmosphere at partially loaded or unload conditions whereby the motor idles for power saving features.

CHAPTER III. SCHEDULED MAINTENANCE

3-1. STANDARD MAINTENANCE SCHEDULE

The maintenance of the air compressor unit equipped with these screw air end should be performed based on the following standard maintenance schedule. The intervals are a guide based on normal operating conditions. If operated in a severe environment, necessary maintenance service should be performed on a more frequent basis. User should carry out the maintenance work, based on either the running hours or the calendar time whichever comes first. Please be advised that Items marked with ○ should be performed by a user while the other marked with ● should be maintained, by an authorized distributor.

Part	Action taken	Maintenance Interval						Remark
		Daily	Monthly	6 Monthly	Annually	2 yearly	4 yearly	
			500 Hrs	3000 Hrs	6K HRS	12K HRS	24K Hrs	
Indication of control panel	Check	○						
Condensation from oil separator	Drain out	○						
Oil level	Check	○						
Oil(recommended brands)	Replace		○					1st check only
Suction filter	Clean		○					
Oil filter element	Replace		○					
Oil scavenge filter	Clean		○					
Oil(recommended brands)	Replace			○				Subsequent replace
Oil scavenge filter	Clean			○				
Oil level gauge	Clean			○				
Mechanical seal	Check for leak				○			
Oil filter element	Replace				○			
Oil scavenge filter	Replace				●			
Suction throttle valve	Clean				●			
Gasket(Suction control valve)	Replace				●			
V-belt/Coupling	Replace					●		
Air-end gasket and o-ring	Check & Replace					●		
Air end(Bearing & Mech. Seal)	Replace						●	

3-2. CONTROL OF LUBRICATION

The control of lubrication is critical. Neglecting it may cause varnish or sludge deposits in the system, resulting in severe damage or breakdown of the unit. The major causes of such deposits are :

- (1) Mixing of different types or brands of oil.
- (2) Use of unsuitable oil.
- (3) Failure to drain the condensation, which will result in an oil deterioration.
- (4) Failure to change oil within a scheduled maintenance interval.

WARNING

Use of inappropriate oil and/or improper maintenance may result in catastrophic damage to the air compressor or may result in a oil separator element fire.

CONSULT YOUR DISTRIBUTOR FOR MAINTENANCE SERVICE AND COLUBE 68 COMPRESSOR OIL.

3-2-1. FUNCTIONS OF OIL

Oil is an essential factor in the oil flooded rotary screw compressor. Use COAIRE COLUBE 68 only, which is developed for pressurized circulation system, containing rust, foam, oxidation and wear inhibitors along with effective water release characteristics. Oil performs the following functions :

- ① Lubrication : Oil lubricates the bearing and other internal components.
- ② Sealing : Oil seals the clearance between the two rotors and clearance between the rotors and inner wall of casing. This prevents air leakage above the inter mesh during compression to increase compression process efficiency.
- ③ Cooling : Oil is injected during compression process to remove the heat of compression.

WARNING

Never mix different brands or types of oils each other. Blending of oils may cause a formation of varnish or sludge deposits in the system. If oils have been carelessly mixed or if a certain brand of oil must be replaced with another, be sure to flush out the oil system first. Consult your distributor for the procedures. We highly recommended the use of Genuine COAIRE Screw Compressor Oil COAIRE-COLUBE 68.

3-2-2. OIL CHANGE

A practical way is to change the oil at the following intervals :

- ① First oil change : 500 hours after initial start-up.
- ② Second oil change : 1,500 hours after the first oil change.(4,000 hours after the initial start-up)

- ③ Third and consequent oil changes : Every 4,000 hours after the previous oil change.

The above intervals are based on normal operating conditions. If condensation is not drained from the unit, the oil will be deteriorated and required more frequent oil changes. Proceed as follows :

- ① Run the unit loaded mode long enough to have the oil warm up.
- ② Stop the unit, confirm that the pressure has been released completely, and close the isolation stop valve at the discharge outlet and disconnect the main electrical.
- ③ Place a drain pan under the oil drain valve of the unit, and open the valve. Open the plug of oil filling port on oil separator to speed up draining.
- ④ For draining the oil cooler, remove the plug at the drain outlet of the oil cooler to let the oil run down.
- ⑤ Drain the oil as completely as possible. Then, close the drain valve of oil separator and drain plug of oil cooler. Return the plug to the drain outlet and tighten.
- ⑥ Fill with new oil through the oil filling port of oil separator. Refer to the specification table for appropriate oil amount.
- ⑦ After securely tightening the plug at the oil filling port, run the unit to make sure there are no oil leaks.

3-2-3. DRAINING CONDENSATION

Moisture contained in intake air can be condensed into water during long unloading time or when the unit is stopped, and this moisture is accumulates in the separator sump, Since the water in a compressor system can cause deterioration of oil and internal rusting, do not neglect draining the condensation at least on a daily basis. Draining should be performed before start-up since oil and condensation have been sufficiently separated from each other. Open the drain valve at outlet of oil separator sump. Use a pan to store the condensation being drained. Closely watch the draining condensation, and close the valve.

WARNING

Even if the unit is in 24 hour continuous service, it is still recommended to perform a draining procedure. Normally in such an operation mode, an extra stand-by compressor has to be installed at the same time to allow for better draining of condensation.

NOTE

If a compressor operation can be suspended (for example, during lunch time), it is a wise practice to drain the condensate once again after the suspension time. Thirty(30) minutes may be enough for sufficient separation of oil from condensation.

CAUTION

LUBRICANT

Avoid prolonged breathing of vapors. Always use adequate ventilation, contact with eyes should be avoided. Avoid prolonged periods of skin contact.

If excessive vapors are inhaled, remove person to fresh air area. In the event of contact with eyes, flush with water and consult a physician if serious irritation persists.

In the event of contact with skin, wash contacted area with soap and water. Wash clothing before reusing.

Contents will burn. Use water fog, foam, dry chemical or carbon dioxide to extinguish.

Avoid use of direct stream of water since product may float and reignite.

Dispose of oil by using a recycling service. Do not dump oil into drain or onto the ground.

Do not place oil or partially filled oil containers in trash. Keep out of sewers and water systems

3-3. STANDARD OVERHAUL PERIOD

When the periodic checking and inspections mentioned on the previous page are appropriately performed and the Air Ends have been operated under normal conditions, the Air Ends should be overhauled according to the following guide :

Overhaul the screw Air Ends within the following years of operation hours which ever case first occurs :

- (1) Ever five years from the date of starting operation
- (2) Every 20,000 operation hours for applications to air-cooled units or every 30,000 operation hours for applications of water-cooled units.

Note

The purpose of the overhauling is to exchange roller bearings and ball bearings with new ones. The exchange of gaskets, O-rings and oil are also required.

3-4. COMPONENT REPLACEMENT GUIDE

3-4-1. Components to be replaced

Securely replace the following components when the screw Air Ends are overhauled.

Name of Component	Item Number(BCS-130)	Item Number(BCS-168)
Cylindrical Roller Bearing	11, 12, 13	12, 13, 14
Angular Contact Ball Bearing	14	15
Adjusting Washer	9	10
Gasket	16, 17	17, 18, 19, 20
O-Ring	28	31
Wave Spring	8	9
Cup Spring	24	27
Washer	27	30

3-4-2. Inspection and Replacement of Components

Check the following components and exchange them with new ones, if required.

Name of Component	Item Number(BCS-130)	Item Number(BCS-168)
Male Rotor	4	5
Female Rotor	5	6
Mechanical Seal	15	16

3-4-3. Screw Rotors

Basically, it is not recommended that the male screw rotors and the female screw rotors be exchanged with new ones. However, in order to maintain the screw compressor's performance including capacity, suppression of noise and vibration, the replacement of the screw rotors can be performed according to the following guide. A file or rough sand paper must not touch the surfaces of the screw rotors. However, the small scratches can be required with an oilstone or #280 sand paper.

3-4-4. Mechanical Seal

Mechanical seal is located on the suction side of male rotor shaft. The contact surfaces are lubricated by oil which is fed through a port in the oil seal housing. The drain tube for this oil is routed back to the air intake via a check valve. This system must be inspected, cleaned or replaced if necessary every 3000 operating hours or every 3 months whichever comes first. Oil seal wear may be monitored/tested. Maximum oil leakage 3 cc/h. Consult your distributor.

CAUTION

Do not install anything to block the drain tube, such as a stop valve. The drain tube should be open to the atmosphere in order to check for the mount oil leak, in the event of such incident.

3-5. STANDARD SPECIFICATIONS

Type	Unit	BCS-130	BCS-168
Power source size @ 125 psig	kW	15 - 29	35 - 89
Capacity @ 125 psig	scfm	72 - 160	195 - 495
Max. Operating Pressure	psig	190	190
Rotor speed @ 125 psig	RPM	2200 - 4400	1500 - 4000
Rotor Diameter	Male	mm	130
	Female	mm	126.88
Rotor Length	mm	150	281
Center Distance	mm	104	132
L/Dm	-	1.154	1.670
Displacement Volume	cb.in./rev.	68.7	234.8
Lobe Combination, M/F	-	5/7	4/6
Driven By(rotor)	-	male	Male
Suction size, Bore	inch	3-9/64	7-7/8
Discharge size, Bore	inch	1-37/64	2-3/4
Weight	lbs	203	474

CHAPTER IV. DISASSEMBLY

4.1. PREPARATION FOR OVERHAUL

Thoroughly perform the following preparation work before starting the overhauling work of the air-ends.

4.1.1. Air-ends

According to the procedures indicated in the instructions of the unit, remove the unit, remove the air-end to be overhauled from the unit. Observe the following air-end handling rules:

- ① The air-end must not be left flange open for longer than 24 hours.
- ② If the air-end is required to be left open for longer than 24 hours, close the covers of the air-end to avoid rust and dust accumulation, and dip the parts of the air-end in oil.
- ③ If the air-end is required to be left open for longer than one week before the next procedures into the air-end, dehydrate the air-end.
- ④ Oil remains in the screw air-end.
- ⑤ The air-end has been placed on the workbench.

4.1.2. Location and Facility

The location where the overhauling work of the air-end is performed should be clean, clear, dry and be provided with a wide service space. The necessary facilities for the overhauling work of the air-end are listed in this manual.

4.1.3. General Tools, special Jigs and Replacement parts

Prepare general tools, special jigs, necessary spare parts and materials in accordance with the lists in this service manual. The general tools, special tools and materials which are necessary for the overhauling work are listed in this manual. The necessary spare parts are listed in this manual, maintenance guide.

4.1.4. Tightening Torque List

Tighten the bolts and nuts in the screw compressor, according to the following tightening torque standard.

Name	M8	M10	M12	M14	M16	M35	M45	M50
Socket Head Bolt	450	800	-	-	-	-	-	-
Lock Nut	-	-	-	-	-	2200	2800	3000

4.2. DISASSEMBLY FOR AIR END

All the parts of the air-end must be reassembled to the same locations of the air-end as before disassembly, excluding consumption articles such as gaskets, oil and replacement parts which are indicated in the maintenance guide. Therefore, in order to avoid confusion, all covers and casings must be marked with a marking pen and all disassembled parts must be positioned on a clean sheet of paper or cloth in the order of disassembly. This service manual has been compiled for the overhauling work of screw air-end, model CHSA-20S ~ 30S. This air-end must be brought into the workshop. After pumping down or purging compressed air from the receiver, remove the screw air-end from the unit according to the following procedures.

- ① Check to ensure that the pressure in the screw air compressor unit is near to zero in gauge pressure, and then purge compressed air from the receiver.
- ② Disconnect all electric wiring.
- ③ Loosen the suction and discharge piping connections and check to confirm that the pressure of the connection part is zero in gauge pressure, then disconnect all the piping.
- ④ Remove the V-Belt from motor shaft and air end rotor shaft.
- ⑤ Lift the air end utilizing wire rope. The weight of the screw air end is shown in the below table.

Air End Model	Weight(kg)
BCS-130	90
BCS-168	208

4.3. SEALCOVER AND OIL SEAL

Required Tools : 8 mm Hexagon Wrench
 2,500kg-cm Torque Wrench
 Plastic Hammer

Procedure

- ① Loosen all M10 hexagon socket bolts(28) with 8mm hexagon wrench.
- ② Remove the bolts(28), the seal cover(1) and the gasket(27).
- ③ Remove the female suction sleeve(15) and the wave spring(14)
- ④ Remove the mechanical seal(16)



Fig 2-3. Oil seal

CAUTION

Be careful not to scratch or damage the air-end shaft.

4.4. OUTLET BEARING COVER & LOCK NUT/WASHER

Required Tools : 8 mm Hexagon Wrench
Rotor Stopper Jig
Bearing Lock Nut Jig
2,500kg-cm Torque Wrench
Flat Head Screwdriver
Plastic Hammer

Procedure

- ① Loosen all M10 hexagon socket bolts(20) with 8mm hexagon wrench.
- ② Remove the bolts(20), the outlet bearing cover(6) and the gasket(17).
- ③ Remove the female and male cup springs(24)
- ④ Remove the bolts(18), the washers(27), sleeves(10) and spring pins(25) from the both sides of the male & female screw rotors.
- ⑤ Release lock washers(23) from the both sides of the male and female screw rotors with a flat head screw driver.
- ⑥ Remove lock washers(23).
- ⑦ Insert the rotor stopper jig to the shaft end of male screw rotor(4) and fix the screw rotors to prevent rotation with M12 bolt.
- ⑧ Attach the bearing lock nut jig to the groove of lock nuts(22). Then, insert a 2,500 kg-cm torque wrench into the square hole of the jig and loosen lock nuts(22).
- ⑨ Remove lock nuts(22) by hand.
- ⑩ Remove the rotor stopper jig.





4.5. OUTLET CASING

Required Tools : Bearing Removal Jig 1
 Bearing Removal Jig 2
 Dowel Pin Removal Jig
 14mm Hexagon Wrench 300mm Length
 Adjustable Wrench 300mm Length

Procedure

- ① Loosen M10 hexagon socket bolts(21) with a 8mm hexagon wrench and remove the bolts by hand.
- ② Remove the dowel pins(26) with dowel pin removal jig.
- ③ Attach the jig 1 to outlet casing(3) at the location of removed bearing cover (5), utilizing six M10 bolts with the length of 45mm. These bolts are included in the jig.
- ④ Attach the two special M24 bolts to the screw holes of the jig 1 and check to confirm that the points of these special bolts lightly touch the end of the screw rotors through the jig 1 as shown in Fig. 2-5.

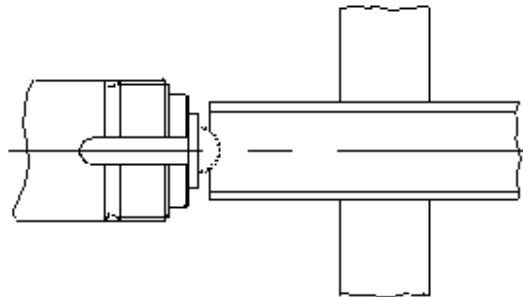


Fig. 2-5.

Note

The confirmation must be performed through the holes of the jig at the position under the special bolts. The right hand side is for the male screw rotor and left hand side is for the female screw rotor.

- ⑥ Turn the special bolts slowly with an adjustable wrench of 300mm length.

Note

Turn the bolts, alternating with every two turns. Then, do not make the gap between the rotor casing and the outlet casing greater than 100mm. If the gap becomes greater than 100mm, the outlet casing can drop.

4.6. OUTLET CASING AND BEARINGS

- (1) Outlet casing with Bearings
 Required Tools : None

Caution

The disassembling work of outlet casing(2) with bearings requires two people, a chain block or lift for suspending them.

Procedure

- ① Remove outlet casing(2), including the jig, together with bearings.
- ② Transport the outlet casing to a clean workbench.

Notes

- ① The weight of the outlet casing is as follows:

Compressor Model	Weight of Outlet Casing(kg)
BCS-130	25
BCS-168	50

- ② The inner rings of the roller bearings are fixed on the screw rotors. Therefore, the main bodies of roller bearing(11) are removed together with the outlet casing, but inner rings of the roller bearings remain on the screw rotor.
- ② Male and Female Screw Rotor Bearings
Required Tools: Copper Tube 22mm O.D × 200mm Length.

Procedure

- ① Remove angular contact ball bearings(14), adjusting washer(9) from the outlet casing(2).
- ② Lightly knock roller bearing(11) from the rear side of the outlet casing(2), and remove roller bearings(11).

4.7. SCREW ROTOR

Required Tools : None

Procedure

- ① Rotate female screw rotor counter clockwise by holding the shaft portion of the female screw rotor, and remove it from the rotor casing.
- ② Slowly rotate male screw rotor clockwise by holding the shaft portion of the male screw rotor, and remove it from the rotor casing.

Caution

Rotate the screw rotor by hand while holding the shaft portion. Before drawing out the screw rotor from rotor casing(1), hold the screw rotor with your hand by holding the lobe portion of the screw rotor.

Note

- ① The weights of the screw rotors are as follows :

Compressor Model	Male Rotor(kg)	Female Rotor(kg)
BCS-130	12	6
BCS-168	15	7

- ② The male rotor can be removed from the rotor casing together with the inner rings of roller bearing(11) and the female rotor can be also removed together with the inner ring of roller bearings(11).
- ③ The four inner rings of the roller bearings remain on the male and female rotors. Remove these inner rings according to the instructions in section 9 of the chapter 4.

4.8. SUCTION SIDE BEARINGS

Required Tools : Copper Tube 22mm O.D. × 200mm Length

Procedure

- ① Lightly knock roller bearing(12) from the rear side of rotor casing(1), and remove roller bearing(12).
- ② Lightly knock roller bearing(13) from the rear side of rotor casing(1), and remove roller bearing(13) from rotor casing.

4.9. Inner Ring of Roller Bearing

Required Tools : Acetylene-Oxygen Burner
Thick Gloves File

Procedure

- ① Remove the rising portions with a file.
- ② Hold the male screw rotor vertically on the workbench.

Note

In the case of the female screw rotor, hold the female screw rotor on the workbench, utilizing a small steel piece, as shown in Fig. 2-9, in order that the inner ring can be removed easily.

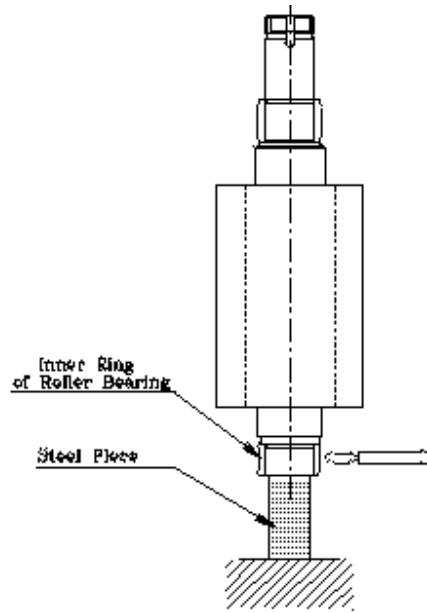


Fig. 2-9

Caution

- ① Heat one point of the ring. Do not move the flame of the burner.
- ② Do not heat the screw rotor, and do not heat the inner ring for longer than five seconds, because the wrap of the screw can occur. Removing the inner ring in a short period of time is the important point regarding this
- ③ The same manner can be applied to the other inner rings of roller bearings(11), (12) and (13) on the male screw rotor and female screw rotor.

CHAPTER V. REASSEMBLY

Reassemble all the parts of the screw Air End, including replacement parts, at the same positions as before disassembly, as already mentioned in chapter IV.

5.1. PREPARATION

Before starting reassembling work, thoroughly perform the following preparation work.

- ① Clean the working location before starting the reassembling work.
- ② Check and clean the required tools and facility.
- ③ Check to confirm the parts to be replaced according to the maintenance guide mentioned in chapter IV. Especially, check to confirm the types and the sizes of bearings. Remove the inner rings of roller bearings from the bearing bodies. The inner rings provide interchangeability among the bearings of the same size. However, in order to avoid confusion, place the bearing bodies and the inner rings in sequence on a clean sheet of paper or a cloth, prior to reassembly.
- ④ Clean all the parts with cleaning oil, spray cleaning oil and then dry the parts with compressed air.
- ⑤ After drying the parts, spread adequate oil on the surfaces of all the parts. Especially, in order to avoid air leakage, spread oil on both of the surfaces of the gasket.

5.2. CLEANING

5.2.1. Rotor Casing

Required Tools : Gasket Remover, Oilstone, Cleaning Oil, Oil Pan for Cleaning
Sponge, Wire Brush, Compressed Air, Waste Cloth

Procedure

- ① Remove gasket, which is stuck to the seal cover side surface of the rotor casing utilizing a gasket remover. Then, finish the surface utilizing an oil stone.
- ② Finish the gasket surface of the suction side of the rotor casing in the same manner.
- ③ Finish the O-ring surface of the flange side of the outlet casing in the same manner.
- ④ Clean the rotor casing with a wire brush, if some adhesive material is detected.
- ⑤ Clean the inside of the rotor casing with cleaning oil and sponge. After the cleaning work, blow out foreign materials and dry the rotor casing using compressed air.

Caution

The edge inside the rotor casing is sharp edge. Therefore, pay attention that your hand does not come into contact with this edge.



5.2.2. Outlet Casing, Seal Cover and Other Covers

Required Tools : Gasket Remover, Oilstone, Cleaning Oil, Oil Pan for Cleaning
Sponge, Wire Brush, Compressed Air, Waste Cloth

Procedure

Remove the gaskets and finish the gasket surfaces of the following casing and covers.

- ① Outlet Bearing Cover ② Outlet Casing
- ③ Seal Cover ④ Discharge End Cover(Flange)

Note

All covers should be open for reassembling rotor set replacement.
The reassembling of the rotor set replacement goes forward the section as next step.



5.2.3. Male Rotor and Female Rotor

Required Tools : Cleaning Oil, Oil Pan for Cleaning, Sponge, Sand Paper #280
 Compressed Air, Waste Cloth

Procedure

- ① Clean male screw rotor with cleaning oil and sponge. After cleaning work, blow the male screw rotor with compressed air.
- ② Clean female screw rotor with cleaning oil and sponge. After cleaning work, blow the female screw rotor with compressed air.
- ③ Check and inspect the screw rotors surface according to the maintenance policy. If there are any sight scratches, repair the screw rotor surface with a sheet of sand paper #280.



5.2.4. Other Internal Components

Required Tools : Cleaning Oil, Oil Pan for Cleaning, Sponge, Sand Paper #280
 Compressed Air, Waste Cloth

Procedure

Clean all other internal components with cleaning oil and sponge. After cleaning work, blow them with compressed air.

5.3. SUCTION SIDE BEARING

5.3.1. Inserting Roller Bearings without Inner Rings

Required Tools : Bearing Inserting Jig

Replacing Parts : 1 Cylindrical Roller Bearing without Inner Ring (Male rotor)
1 Cylindrical Roller Bearing without Inner Ring (Female rotor)

Procedure

- ① Insert new cylindrical roller bearing without inner ring into the male rotor hole of the rotor casing(for model CHSA-20S, 25S, 30S) by grasping the inside of the bearing.
- ② Insert new roller bearing without an inner ring into the female rotor hole of the rotor casing in the same manner.
- ③ Slightly tap the bearings to the correct place, with the roller bearing with roller bearing inserting jig and by hand.

Note

Face the roller bearing surface, on which the bearing model number is denoted, towards the rotor casing.

Model	BCS-130		BCS-168	
	Suction side	Discharge side	Suction side	Discharge side
Male rotor side	Nu208	Nu209	Nu212	Nu211
Female rotor side	Nu207	Nu209	Nu2209	Nu211

5.3.2. Inserting Inner Rings of Roller Bearings

Required Tools : Steel Plate, Thermometer, Heater, Thick Glove

Replacing Parts : 1 Inner Ring for Roller Bearing (Male rotor) - Suction side
1 Inner Ring for Roller Bearing (Female rotor) -Suction side
1 Inner Ring for Roller Bearing (Male rotor) - Discharge side
1 Inner Ring for Roller Bearing (Female rotor) - Discharge side

Procedure

- ① Place the new roller bearings on the steel plate. Then, heat the bearings to 80℃ ~ 90℃ with a heater.

Caution

Check the temperature of the refrigeration oil with a thermometer.

- ② Insert one of the hot inner rings of new roller bearing to the suction side of male screw rotor.
- ③ The same manner can be applied to the other inner rings as follows :
Inner ring of roller bearing for discharge side of male screw rotor.
Inner ring of roller bearing for suction side of female screw rotor.
Inner ring of roller bearing for discharge side of female screw rotor.

Caution

- ① The inner rings are interchangeable among the same models of roller bearings.
- ② Place the inner rings in the direction as shown in Fig. 3-3 so that the model numbers of the bearings can be confirmed after the inner rings are inserted.
- ③ If the inner rings cannot be smoothly inserted into the screw rotor, repeat the entire procedure.

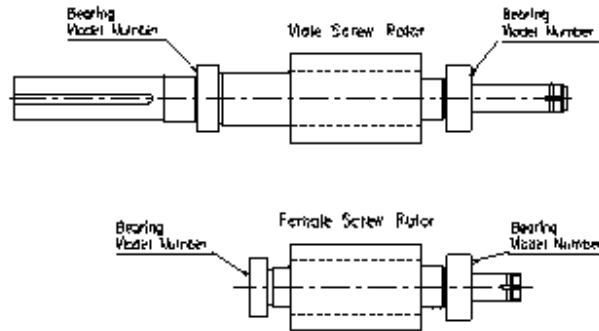


Fig. 3-3

5.3.4. SCREW ROTOR

Required Tools: Refrigeration Oil with Oilier

Procedure

- 1) Adequately spread refrigeration oil on the surface of the inner rings of roller bearings(11, 13) on the female screw rotor.
- 2) Adequately spread refrigeration oil on the surface of the inner rings of roller bearings(11, 12) on the male screw rotor.
- 3) Insert male screw rotor(4) to the rotor casing, by supporting it by hand while rotating the male screw rotor clockwise.





Caution

The edge of the rotor casing is extremely sharp and dangerous like a razor. Pay careful attention that your hands do not touch the edge.

- 4) Insert female screw rotor(5) into the rotor casing and slightly rotate the female screw rotor counterclockwise which is combined with the male screw rotor.

5.3.5. OUTLET CASING

Required Tools : 2 M10 Stud Bolts, Steel Hammer, 8mm Hexagon Wrench, Plastic Hammer, Liquid Gasket(Loctite No.573), O-ring

Procedure

- ① Attach two M10 stud bolts to the top position of the discharge side of the rotor casing.
- ② Insert O-ring(28) with grease.
- ③ Insert one of the outer rings of new roller bearings for male and female screw rotors in the outlet casing.
- ④ Adequately coat liquid gasket around O-ring(28) on the surface of the rotor casing(1) to be connected with the outlet casing(2).
- ⑤ Attach the outlet casing(2) to the rotor casing along the two stud bolts. Insert two knock dowel pins(26) to the knock pin holes of the outlet casing with the steel hammer.
- ⑥ Tighten the outlet casing to the rotor casing with the M10 bolts(21).





5.3.6. DISCHARGE SIDE ROLLER BEARINGS

Required Tools : Roller Bearing Inserting Jig
 Rotor Stopper Jig
 Oil with Oilier
 Plastic Hammer

Replacing Parts : 2 Roller Bearing(11) without Inner Ring

Procedure

- ① Fix male rotor with rotor stopper jig.
- ② Adequately spread refrigerant oil on roller bearing(11) and insert it into the male screw rotor of the outlet casing.
- ③ Adequately spread refrigerant oil on roller bearing(11) and insert it into the female screw rotor of the outlet casing.
- ④ Depress roller bearings(11) to the extreme interior with the roller bearing inserting jig. Face the roller bearing surface, for which the bearing model number is denoted, towards you.



5.3.7. ADJUSTING WASHERS AND BALL BEARINGS, Etc.

This procedure is the most important when performing screw air end reassembling work, because the gap between the screw rotors and the rotor casing in screw rotor shaft direction must be adjusted within a range of 0.05mm to 0.070mm for model BC-S201 ~ S301 and within a range of 0.07mm to 0.10mm for model BC-S501 ~ S1001. The movement of the screw in the axial direction is supported with ball bearings. Accordingly, the gap can be adjusted by changing the thicknesses of adjusting washers(9).

5.3.7.1. Thickness of Adjusting Washers

Required Tools : Ball Bearing Measuring Jig
 Rotor Gap Measuring Jig
 Micrometer with Measuring Range of 0mm to 25mm
 Record Sheet for Gap Adjustment

Replacing Parts : Adjusting Washer(9) for Male Rotor
 Adjusting Washer(9) for Female Rotor

Procedure

- ① Prepare a record sheet for gap adjustment.
- ② Measure the thickness of the adjusting washers with a micrometer and record the actual thicknesses in the record sheet.

5.3.7.2. Total Gap

Required Tools : Dial Gauge with Magnet Base

Procedure

- ① Attach the magnet base of the dial gauge to the surface of the outlet casing, and contact the spindle of the dial gauge with the end of the male screw rotor.
- ② Depress the male screw rotor to the discharge side and adjust the dial to the zero position.
- ⑤ Depress the male screw rotor to the suction side and read the dial. This reading T indicates the total gap between the male screw rotor, the rotor casing and the outlet casing. Record T in the record sheet.

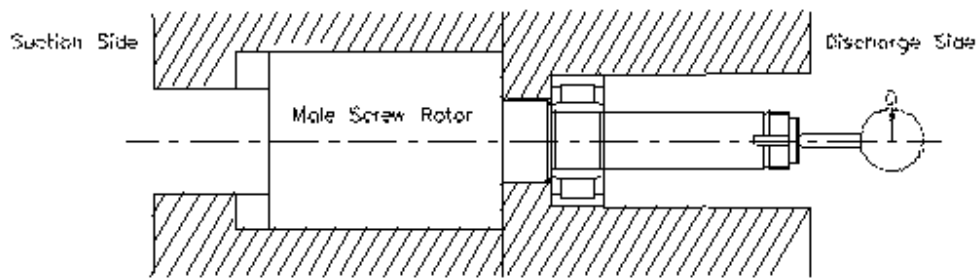


Fig. 5-2

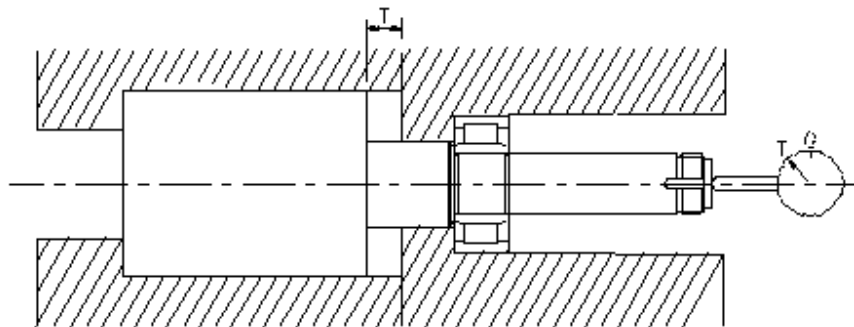


Fig. 5-3

- ④ This procedure should also be performed for the female screw rotor to measure the total gap between the female screw rotor, the rotor casing and outlet casing. Record T in the record sheet.
- ⑤ Insert adjusting washer(9) into the hole for male screw rotor of the outlet casing, after spreading refrigeration oil on their surfaces and record actual thickness(T1) of the adjusting washer(9).
- ⑥ Insert ball bearing measuring jig into the hole for male rotor of the outlet casing.
- ⑦ Insert M12 bolt and nut into the hole of the rotor gap measuring jig. After inserting this jig into the hole for male screw rotor of the outlet casing, insert M12 bolt to the end of the male rotor by hand and tighten nut .
- ⑧ Attach the magnet base of the dial gauge to the surface of the outlet casing and pull the jig towards you. And then, depress the male rotor to the outlet side.
- ⑨ Attach the magnet base of the dial gauge to the surface of the outlet casing and adjust the dial to the zero position.

⑩ Depress the jig to the suction side and read the dial and record T1 in the record sheet.

Caution

Repeat the measurement with a dial gauge three or four times to confirm an accurate reading.



5.3.7.3. Selection of Adjusting Washer

Required Tools : Oilstone

Procedure

- ① Calculate the difference between the recommended gap, that is, 0.05mm ~ 0.07mm and actual gap to be measured by the dial gauge as follows.

$$T2 - 0.05 = T3(\text{Gap Difference})$$

Record T3 in the record sheet.

- ② Select one of the adjusting washer in consideration of the gap difference.
 $T4(\text{Thickness of New Adjusting Washer})$
 $= T1(\text{Thickness of Initial Adjusting Washer}) + T3(\text{Gap Difference})$

Example

If there are $T1=6.1\text{mm}$, $T2=0.08\text{mm}$,

$$T2(0.08) - 0.05 = T3(0.03)$$

$$T4 = T1(6.1) + T3(0.03) = \underline{6.13\text{mm}}$$

- ③ If an appropriate thickness of a new adjusting washer(9) is not available, reduce the thickness of a slightly thicker adjusting washer by utilizing an oilstone until an appropriate thickness is achieved.
- ④ Exchange the final selected adjusting washer and measure the discharge side gap. If an adjusting washer with an appropriate thickness is selected at this stage, the discharge gap will be correct.

5.3.7.4. Ball Bearings

Required Tools : Ball Bearing Inserting Jig

Rotor Stopper Jig

2,500 kg-cm Torque Wrench

Oil with Oilier

Heater with Oil Pan

Replacing Parts : Ball Bearing(14)

Procedure

- ① Insert new adjusting washer(9) and after spreading oil on their surfaces.
- ② Heat ball bearings(14) to a range of 60°C to 80°C with an oil pan, and insert it into the hole for the male rotor of the outlet casing with ball bearing inserting jig.

Caution

Check the direction of the ball bearings as shown in Fig. 5-4.

- ③ Check to confirm that the ball bearings are inserted to the extreme interior, utilizing the ball bearing inserting jig and slightly tapping with a hammer.
- ④ The same procedure can be performed for the female screw rotor as shown in Fig. 5-5.

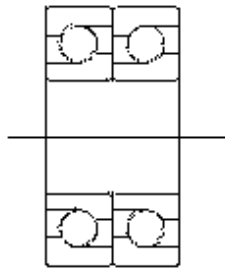


Fig. 5-4

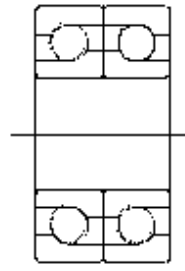


Fig. 5-5.



- ⑤ Insert lock washers(23) and screw lock nuts(22) to the male screw rotor and the female screw rotor by hand until they reach the surface of the ball bearings.
- ⑥ Attach rotor stopper jig to the motor side of the male screw rotor shaft, and fix it with M12 bolt.
- ⑦ Tighten lock nuts(22), by inserting the bearing lock-nut jig into the notch of the lock nut.



5.3.8. OUTLET BEARING COVER

Required Tools : 8 mm Hexagon Wrench
 2,500kg-cm Torque Wrench
 Oil with Oilier

Replacing Parts : Gasket(17)

Procedure

- ① Insert spring pin(25) to sleeve(10) for male and female screw rotors.
- ② Insert sleeve(10) with spring pin(25) to both sides male and female screw rotors of outlet casing(2).
- ③ Insert cup spring(24) to the sleeve(10) of both sides male and female screw rotors.
- ④ Tighten bolts(18) with washers(27).
- ⑤ Attach the gasket(17) with refrigeration oil on the top position of outlet casing(2).
- ⑥ Tighten bolts(20) with 2,500 kg-cm torque wrench, after attach the outlet bearing cover(6) on the gasket(17).



5.3.9. OIL SEAL AND SEAL COVER

Required Tools : 8 mm Hexagon Wrench
2,500kg-cm Torque Wrench
Oil with Oilier

Replacing Parts : Gasket(16)

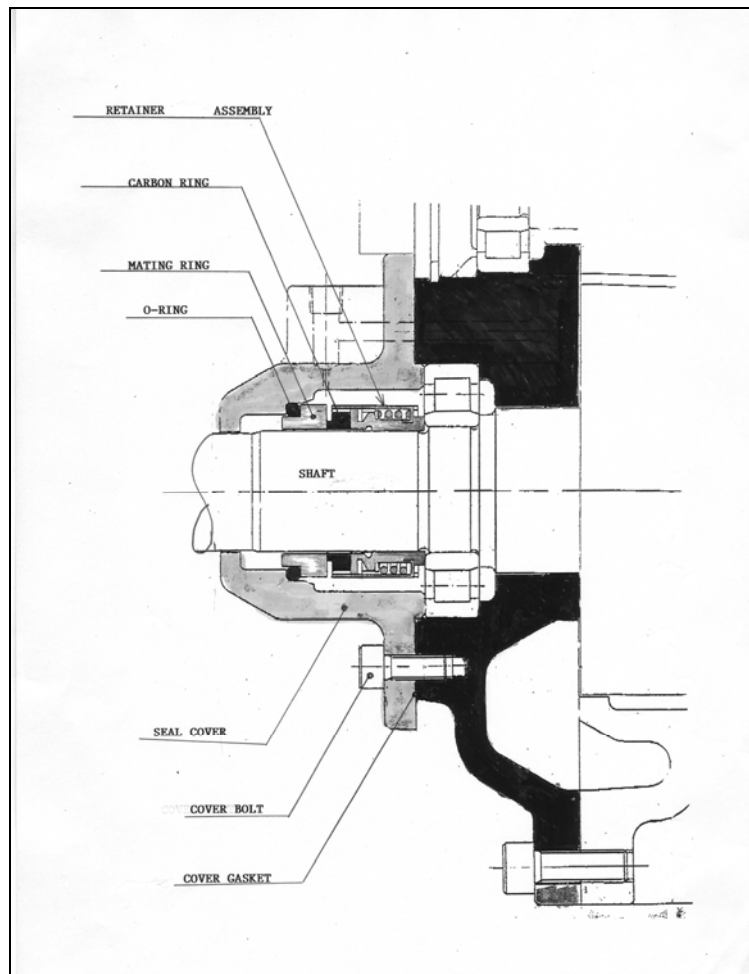
Procedure

- ① Thoroughly clean all remaining parts.
- ② Insert wave spring(14) and suction sleeve(15) to female screw rotor side of rotor casing(2).
- ③ Lubricate the new seal face with clean compressor oil.

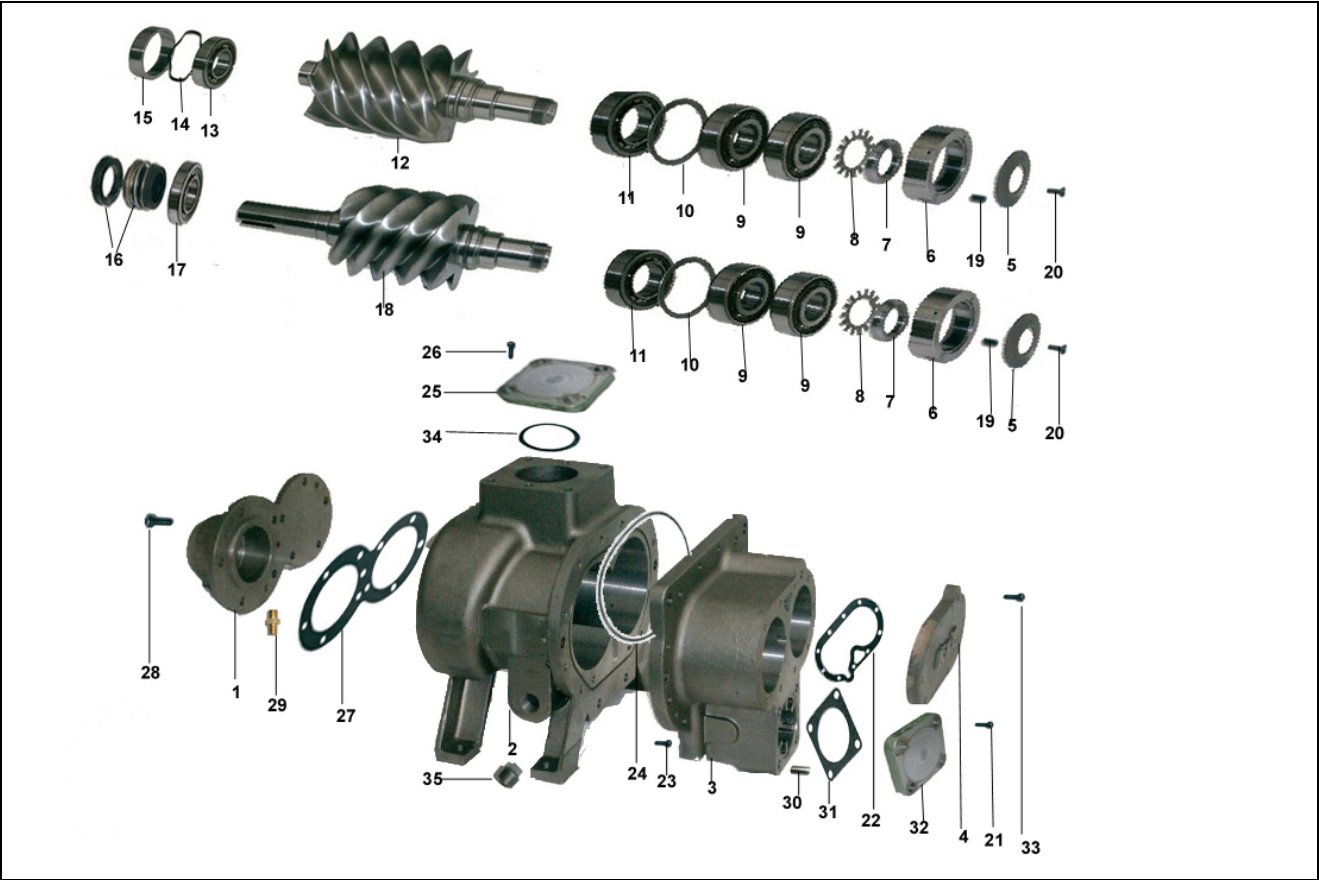
CAUTION

Be careful not to scratch the seal face or mating ring, scratch or break the carbon ring of the seal assembly. Wipe the lapped(mating) surfaces of the mating ring and carbon ring with a clean lint free cloth before installing the seal retainer assembly.

- ④ Insert seal retainer to the male rotor shaft(18) securely.
- ⑤ Check retainer assembly to be inserted properly. Make sure that there is no gap between end face of the bellows and bearing surface
- ⑥ Install the o-ring and mating ring in the bearing cover(1)
- ⑦ Attach gasket(27) with oil on the top position of rotor casing(2) .
- ⑧ Tighten bolts(28) with 2,500 kg-cm torque wrench, after attach the seal cover(1) on the gasket(27).

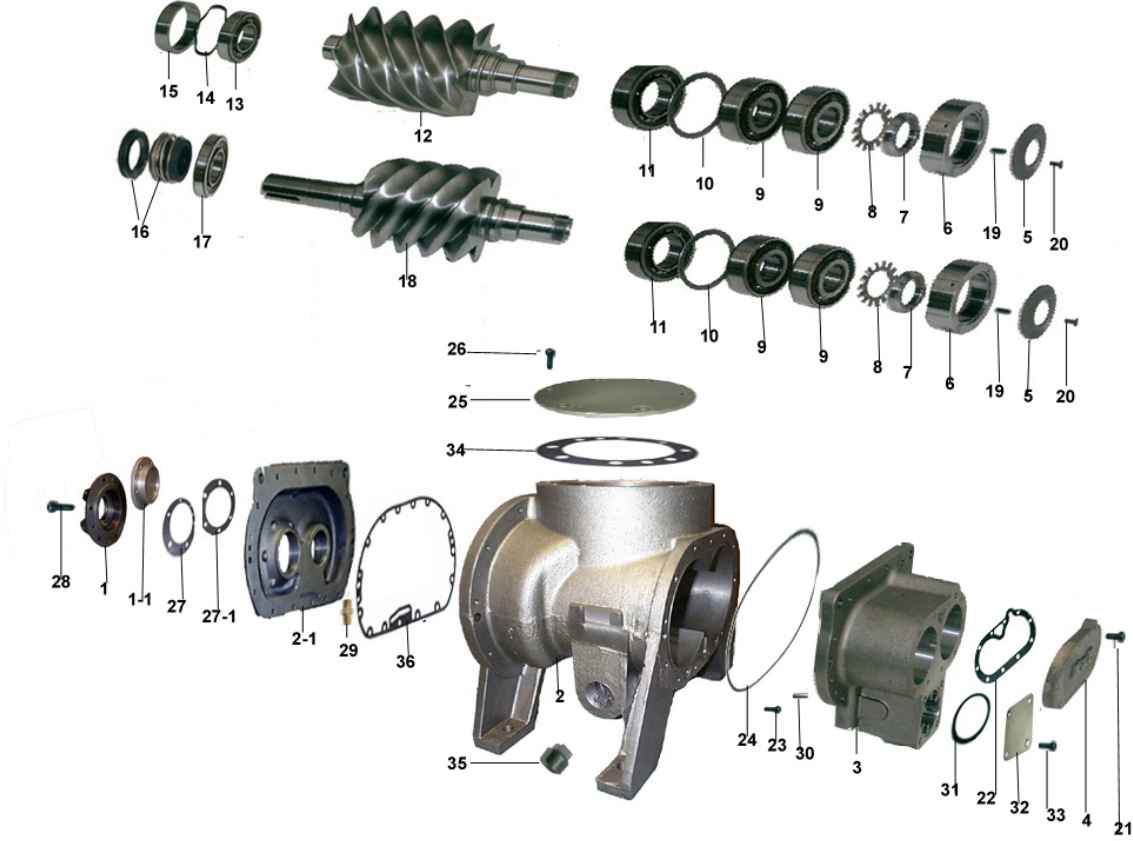


Exploded View – Model : BCS-130 FOR CHSA-20S through CHSA-30S



NO.	Part Name	Specification	Part No.	(Q'ty/Unit)
1	Seal Cover	AC31246	BCS-130-01	1
2	Rotor Casing	AC10105	BCS-130-02	1
3	Outlet Casing	AC10163	BCS-130-03	1
4	Outlet Bearing Cover	AC20685	BCS-130-04	1
5	Cup spring	OD63xD31x61,8	BCS-130-05	2
6	Sleeve	AC30713	BCS-130-06	2
7	Lock Nut	AN07(KSB-2004)	BCS-130-07	2
8	Lock Washer	AW07(KSB-2005)	BCS-130-08	2
9	Angular Contact Ball Brg.	7307B EGAP	BCS-130-09	4
10	Adjusting Washer	AC40581	BCS-130-10	2
11	Cylindrical Roller Brg.	NU209E TVP2	BCS-130-11	2
12	Female Rotor	AC10110	BCS-130-12	1
13	Cylindrical Roller Brg.	NU207E TVP2	BCS-130-13	1
14	Wave Spring	OD74xD64x10.5	BCS-130-14	1
15	Female Suction Sleeve	AC41141-1	BCS-130-15	1
16	Mechanical Seal	MG12/60 -G6(ASVGG), BURGMANN	BCS-130-16	1
17	Cylindrical Roller Brg	NU208E TVP2	BCS-130-17	1
18	Male Rotor	AC10108	BCS-130-18	1
19	Spring Pin	3xL10(KSB 1339)	BCS-130-19	2
20	Hex. Socket Bolt	M4xL6	BCS-130-20	2
21	Hex. Socket Bolt	M8xL30	BCS-130-21	10
22	Gasket(Outlet Brg. Cover)	TOMBO#1901, AC20687	BCS-130-22	1
23	Hex. Socket Bolt	M10xL30	BCS-130-23	8
24	O-Ring	3.5, Hs70 5	BCS-130-24	1
25	Suction Flange	BC400005-01	BCS-130-25	1
26	Hex. Socket Bolt	S45C, M10XL30	BCS-130-26	4
27	Gasket (Seal Cover)	TOMBO#1901, AC41142	BCS-130-27	1
28	Hex. Socket Bolt	M8xL20	BCS-130-28	10
29	Nipple	Flare 1/4"	BCS-130-29	1
30	Dowel Pin	AC40582	BCS-130-30	2
31	Discharge Flange Gasket	AC410151	BCS-130-31	1
32	Discharge Flange	BC400006-02	BCS-130-32	1
33	Hex. Socket Bolt	M10XL30, S45C	BCS-130-33	4
34	Suction Flange Gasket	BC400005-02	BCS-130-34	1
35	Socket Plug	PT 3/4"	BCS-130-35	1

Exploded View – Model : BCS-168 FOR CHSA-50S through CHSA-100S



NO.	Part Name	Specification	Part No.	(Qty/Unit)
1	Seal Cover	AC20809	BCS-168-01	1
1-1	Female Cover	AC41139	BCS-168-01-1	1
2	Rotor Casing	AC20800	BCS-168-02	1
2-2	Inlet Casing	AC10207	BCS-168-02-1	1
3	Outlet Casing	AC10221	BCS-168-03	1
4	Outlet Bearing Cover	AC31284	BCS-168-04	1
5	Cup spring	OD63xID31x61,8	BCS-168-05	2
6	Sleeve	KD16811-111	BCS-168-06	2
7	Lock Nut	AN07(KSB-2004)	BCS-168-07	2
8	Lock Washer	AW07(KSB-2005)	BCS-168-08	2
9	Angular Contact Ball Brg.	7309B EGAP	BCS-168-09	4
10	Adjusting Washer	KD16812-112	BCS-168-10	2
11	Cylindrical Roller Brg.	NU211ECP	BCS-168-11	2
12	Female Rotor	KD16811-109	BCS-168-12	1
13	Cylindrical Roller Brg.	NU207E TVP2	BCS-168-13	1
14	Wave Spring	OD74xID64x10.5	BCS-168-14	1
15	Female Suction Sleeve	AC41141-1	BCS-168-15	1
16	Mechanical Seal	MG12/60 -G6(ASVGG), BURGMANN	BCS-168-16	1
17	Cylindrical Roller Brg	NU208E TVP2	BCS-168-17	1
18	Male Rotor	KD16811-108	BCS-168-18	1
19	Spring Pin	3xL10(KSB 1339)	BCS-168-19	2
20	Hex. Socket Bolt	M4xL6	BCS-168-20	2
21	Hex. Socket Bolt	M8xL30	BCS-168-21	10
22	Gasket(Outlet Brg. Cover)	AC20688	BCS-168-22	1
23	Hex. Socket Bolt	M10xL30	BCS-168-23	4
24	O-Ring	3.5, Hs70 5	BCS-168-24	1
25	Suction Flange	AC41166	BCS-168-25	1
26	Hex. Socket Bolt	S45C, M10XL30	BCS-168-26	4
27	Gasket (Seal Cover)	AC41165	BCS-168-27	1
27-1	Gasket(Female Cover)	AC41140	BCS-168-27-1	1
28	Hex. Socket Bolt	M8xL20	BCS-168-28	10
29	Nipple	Flare 1/4"	BCS-168-29	2
30	Dowel Pin	14xL33	BCS-168-30	2
31	Discharge Flange Gasket	AC41170	BCS-168-31	1
32	Discharge Flange	AC41167	BCS-168-32	1
33	Hex. Socket Bolt	M10XL30, S45C	BCS-168-33	4
34	Suction Flange Gasket	AC41168	BCS-168-34	1
35	Socket Plug	PT 1-1/2"	BCS-168-35	1
36	Gasket(Inlet Casing)	KD16811-151	BCS-168-36	1

WARRANTY CLAIM REPORT

MODEL	CHSA-
SERIAL NO.	
RUN HOURS	Hrs.

DATE : / /

DISTRIBUTOR ADDRESS			
		PHONE	
		FAX	

CUSTOMER ADDRESS			
		PHONE	
		FAX	

SYMPTOM:

FAULT DIAGNOSIS:

RESOLUTION:

PARTS REQUIRED

No.	PART NAME/DESCRIPTIONS	Q'TY
1		
2		
3		

LABOR COST

TRAVEL TIME	Hrs x	\$/Hr\$
LABOR TIME	Hrs x	\$/Hr\$
TOTAL COST		\$

WRITTEN BY _____ SIGNATURE X _____

QUALITY AND RELIABILITY WITHOUT COMPROMISE

COAIRE compressors are thoroughly tested at the factory and warranted against defects in workmanship and material for a period of 12 months. The entire compressor package is warranted for a period of 12 months from the date of installation or 18 months from the date of factory shipment including parts and labor. The five(5) year air-end warranty includes parts only. The requirements are the use of genuine COAIRE maintenance fluid, replacement parts and annual oil sample sent to COAIRE. The warranty is void, if the product is modified without COAIRE's approval or use of maintenance fluids and parts other than genuine COAIRE products.



TECHNOLOGIES CORP.

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COAIRE reserves the right to make changes, at any time without notice as a result of our commitment to continuous improvement.